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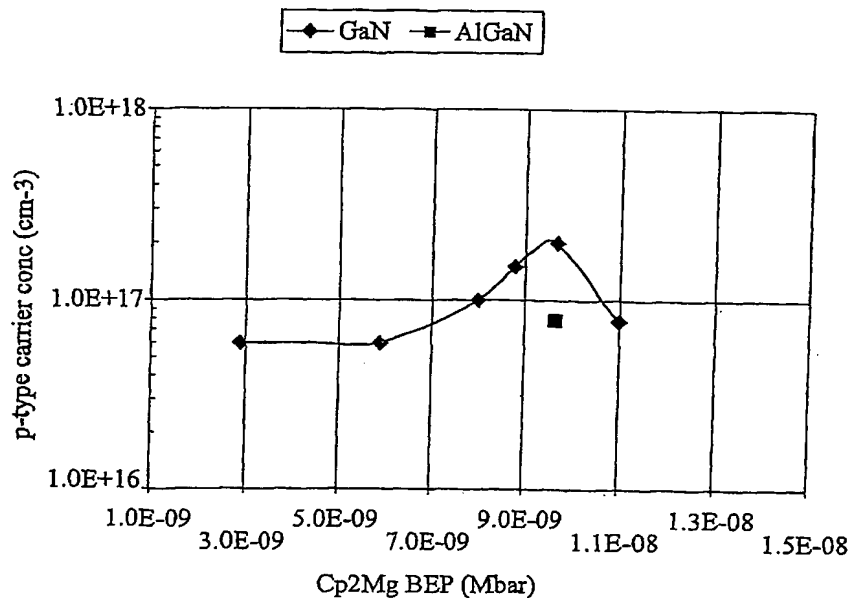
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(54) Title: MBE GROWTH OF P-TYPE NITRIDE SEMICONDUCTOR MATERIALS



(57) Abstract: A method of growing a p-type nitride semiconductor material by molecular beam epitaxy (MBE) uses bis(cyclopentadienyl)magnesium (Cp2Mg) as the source of magnesium dopant atoms. Ammonia gas is used as the nitrogen precursor for the MBE growth process. To grow p-type GaN, for example, by the method of the invention, gallium, ammonia and Cp2Mg are supplied to an MBE growth chamber; to grow p-type AlGaIn, aluminium is additionally supplied to the growth chamber. The growth process of the invention produces a p-type carrier concentration, as measured by room temperature Hall effect measurements, of up to 2 10<sup>17</sup>cm<sup>-3</sup>, without the need for any post-growth step of activating the dopant atoms.

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